MISSOURI BOTANICAL GARDEN

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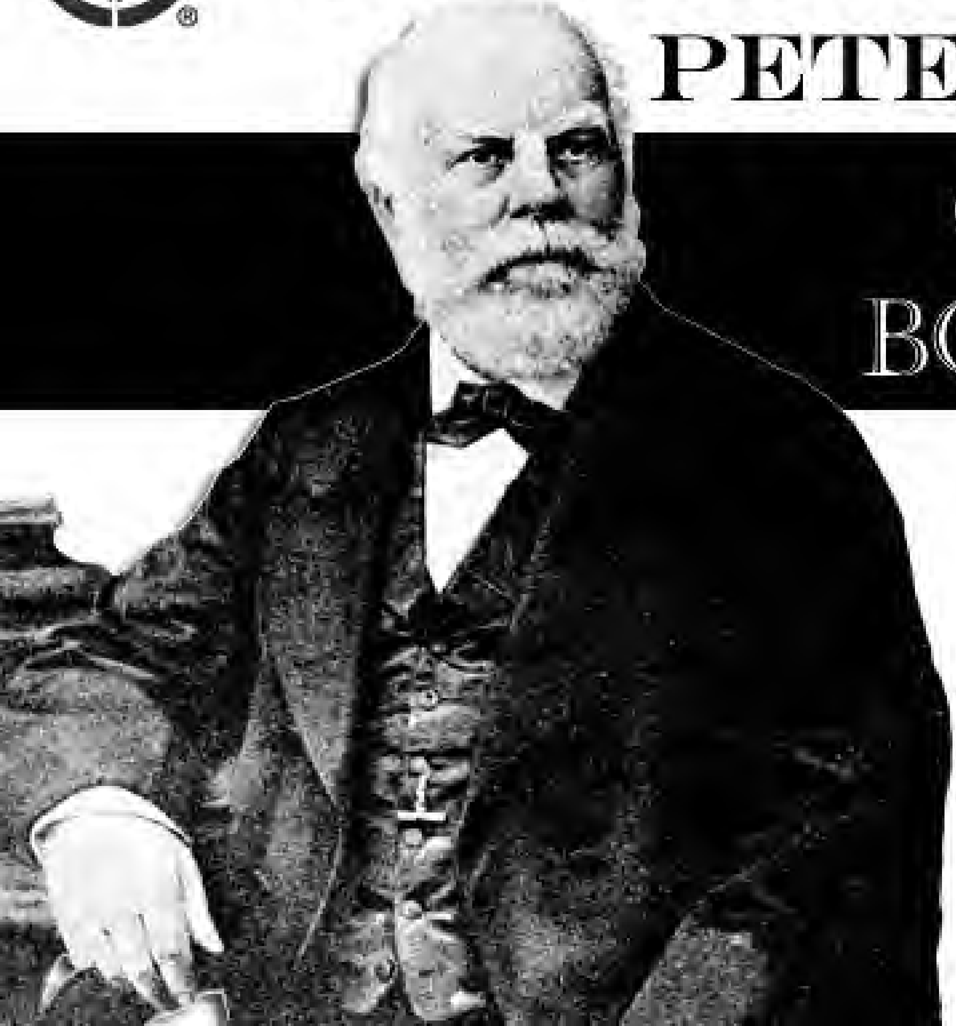

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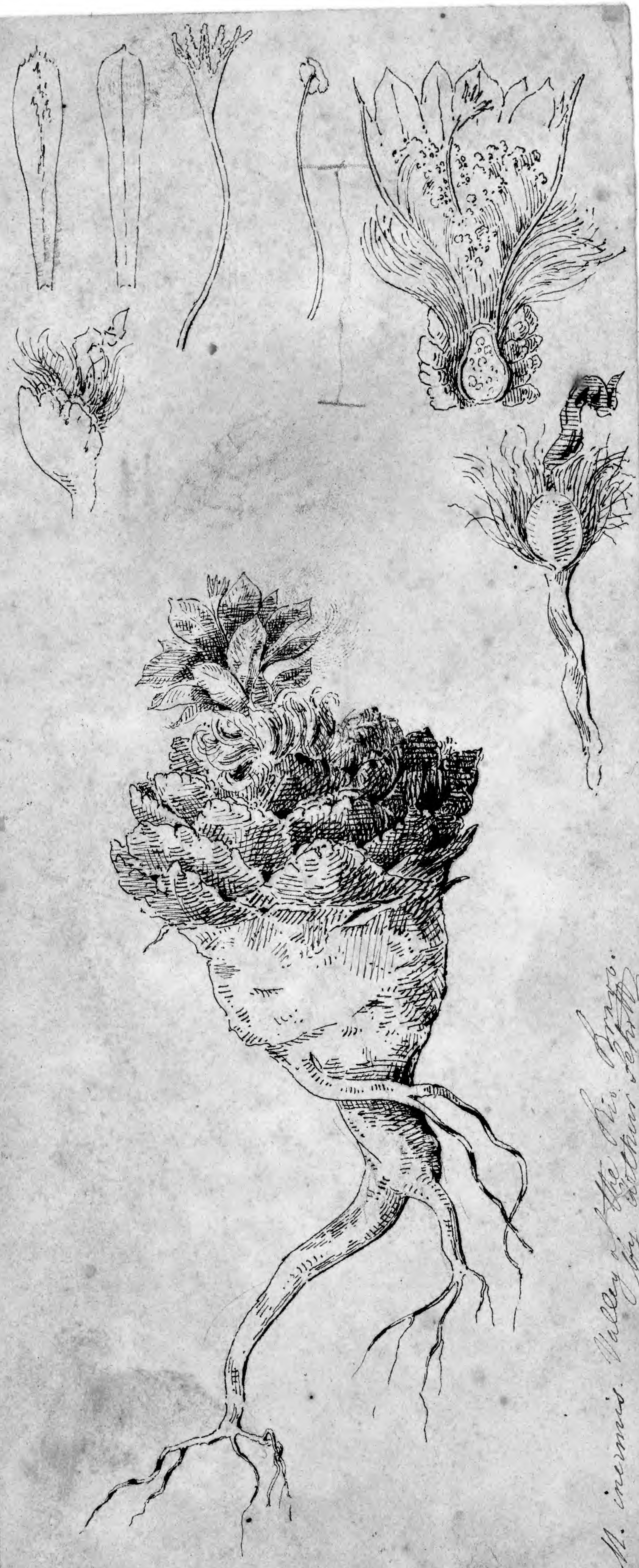

M. inermis Valley of the Rio Bravo.
fig. by Arthur Schott

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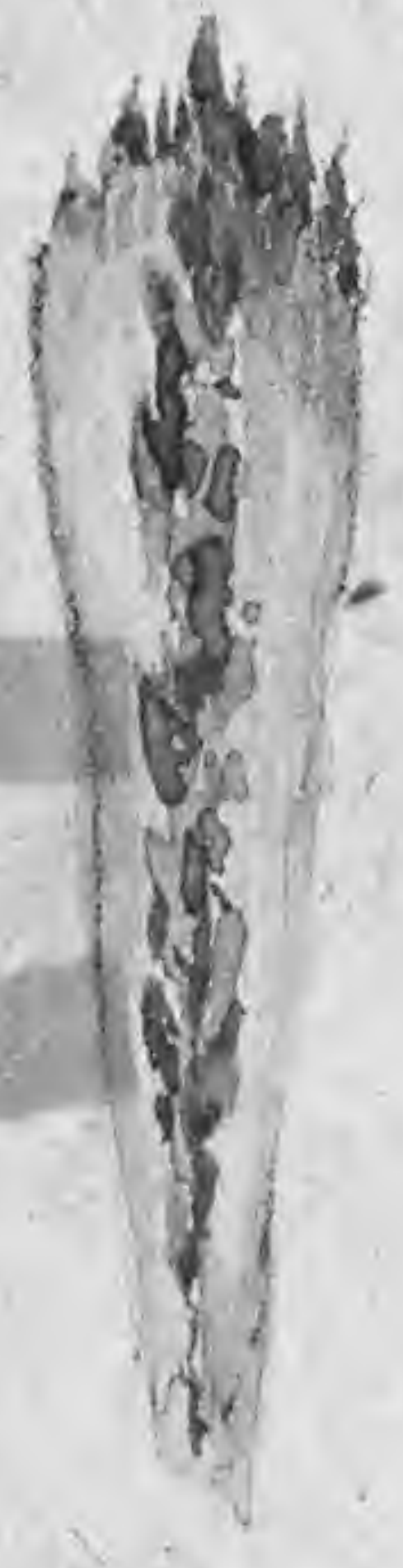
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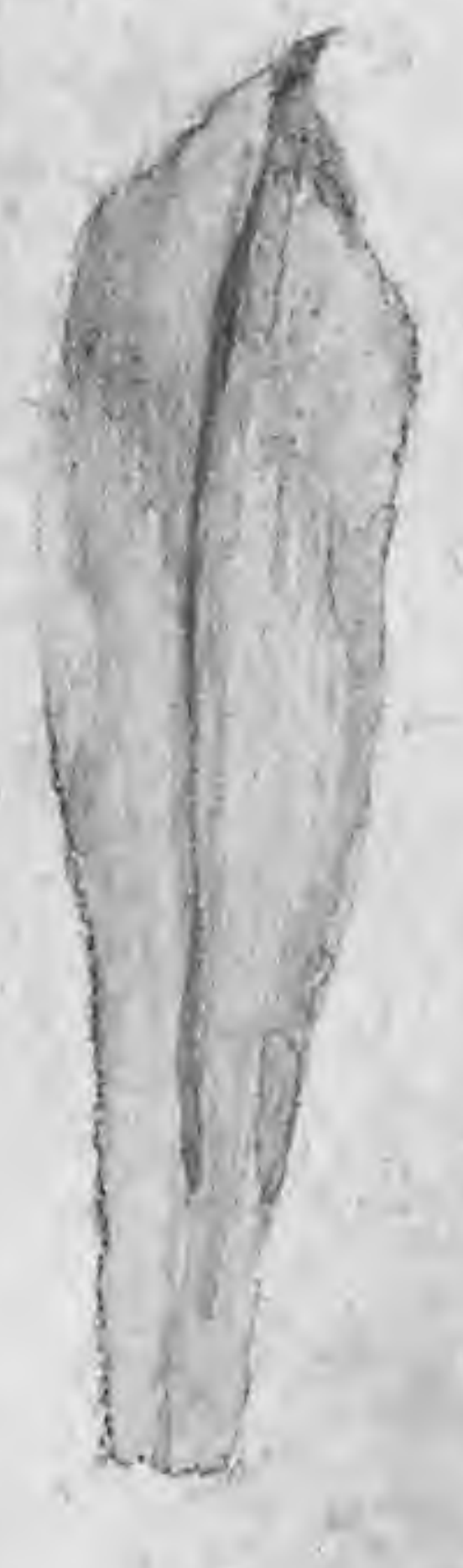
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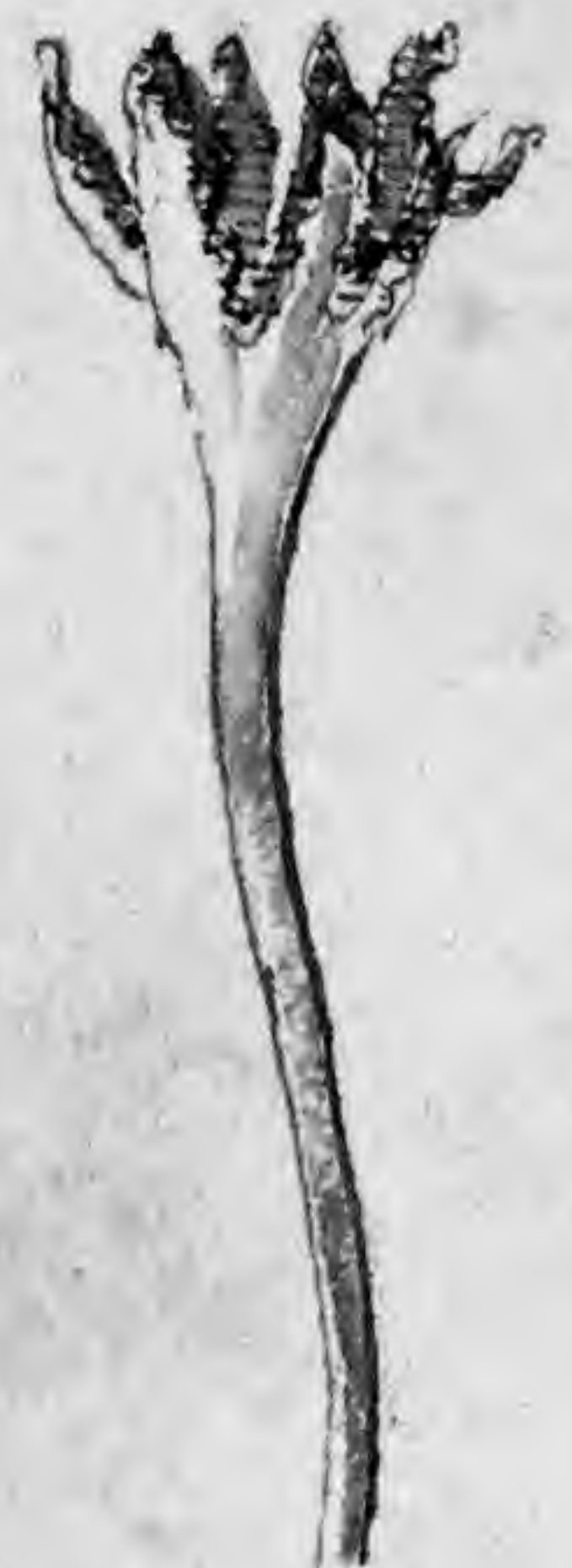
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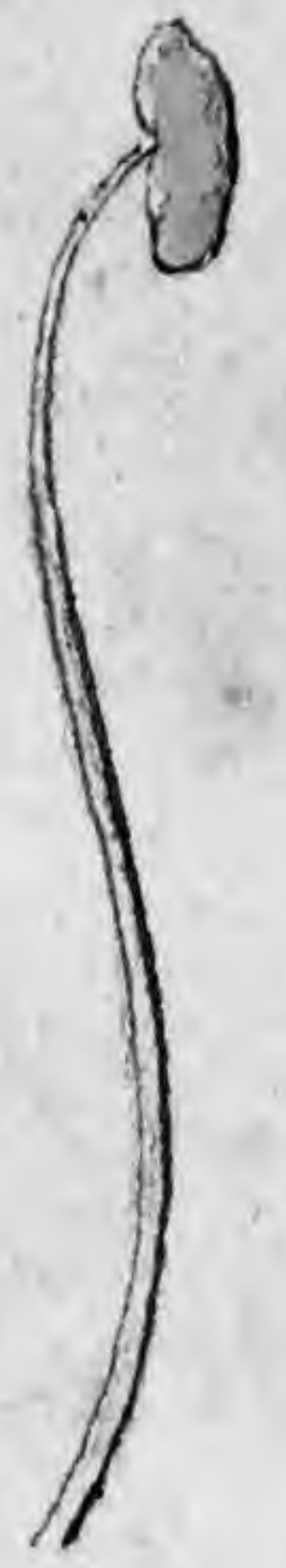
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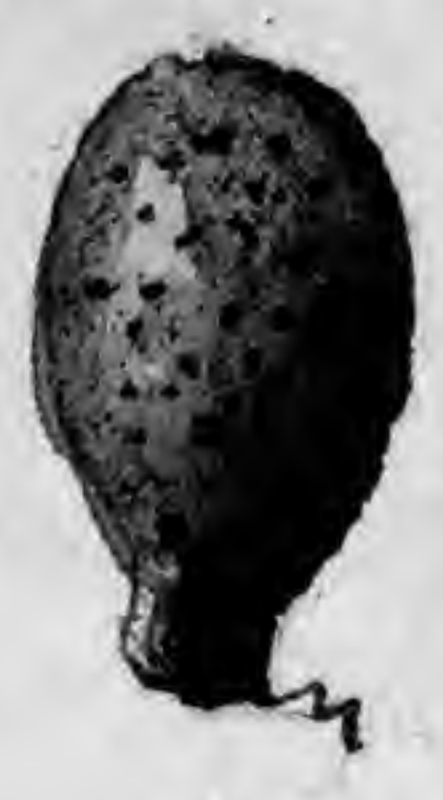
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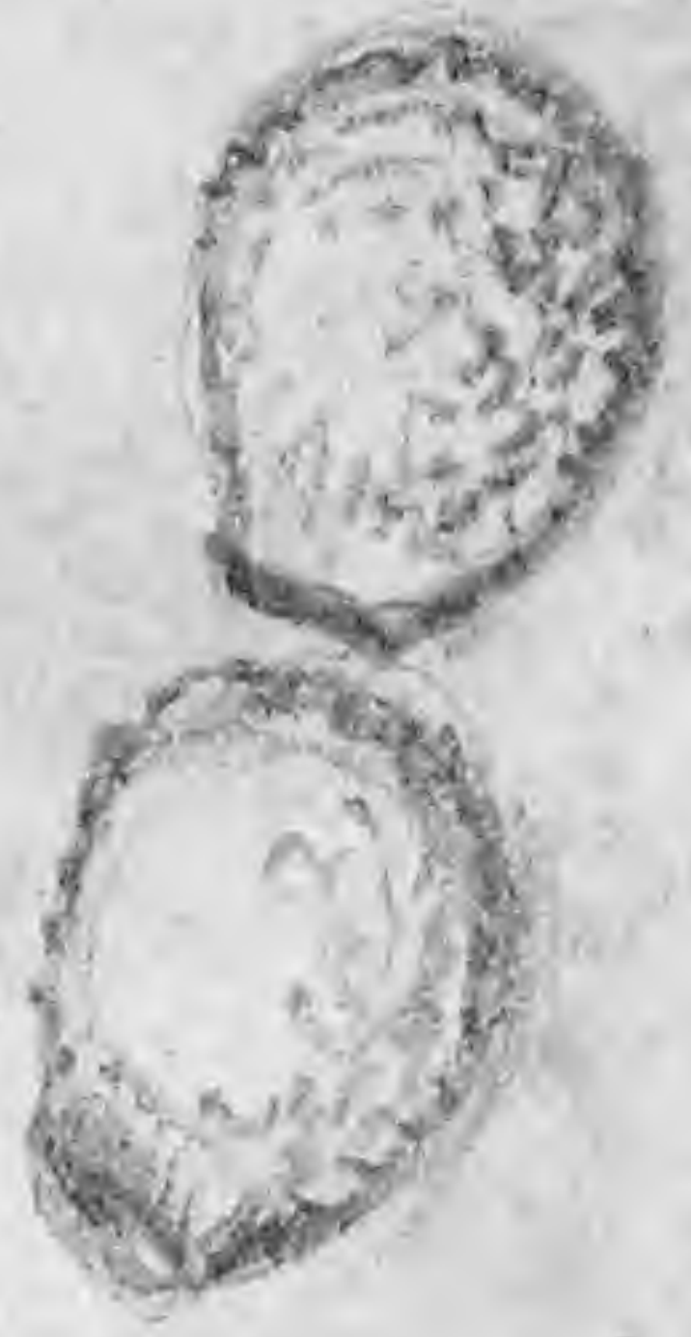

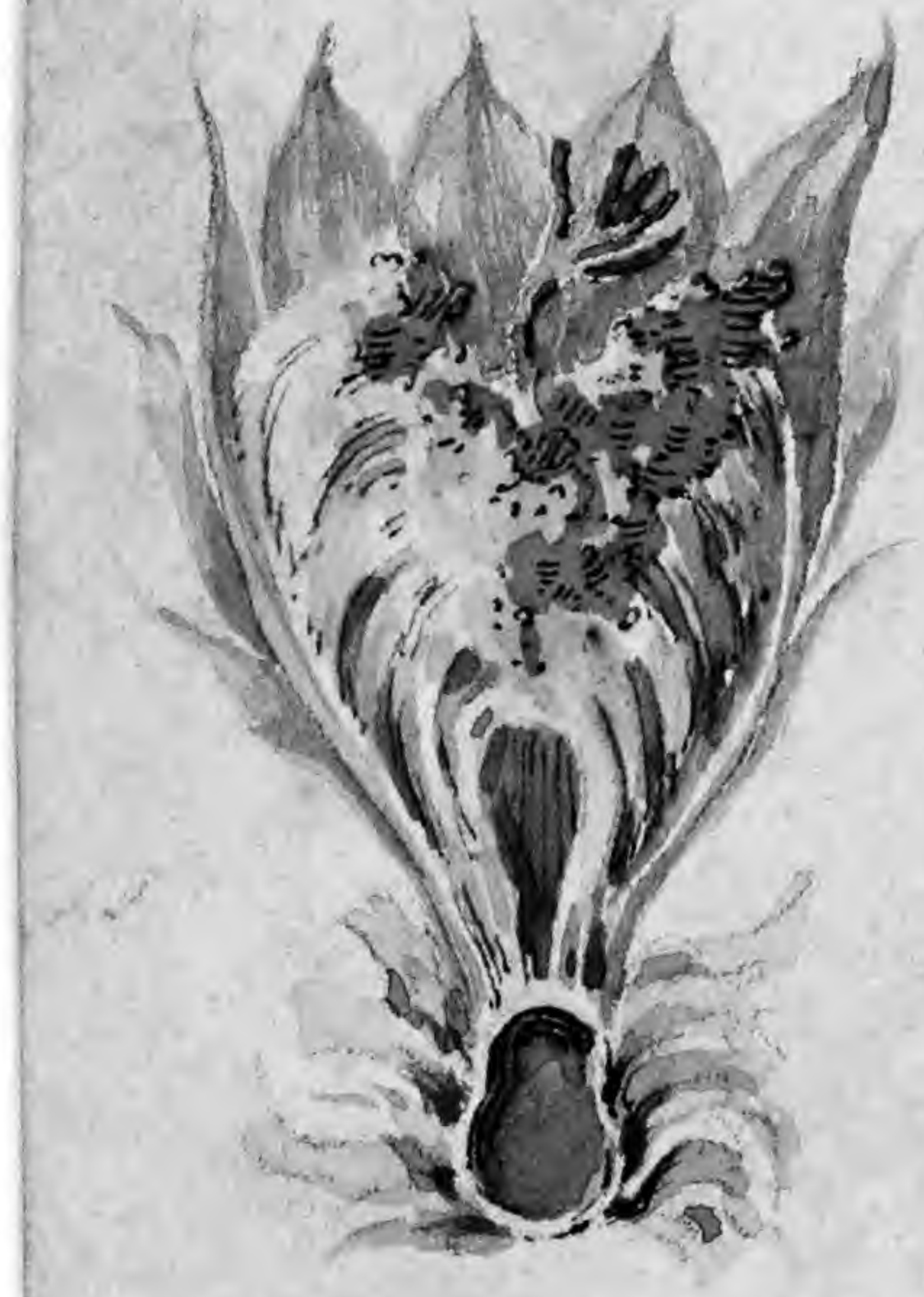
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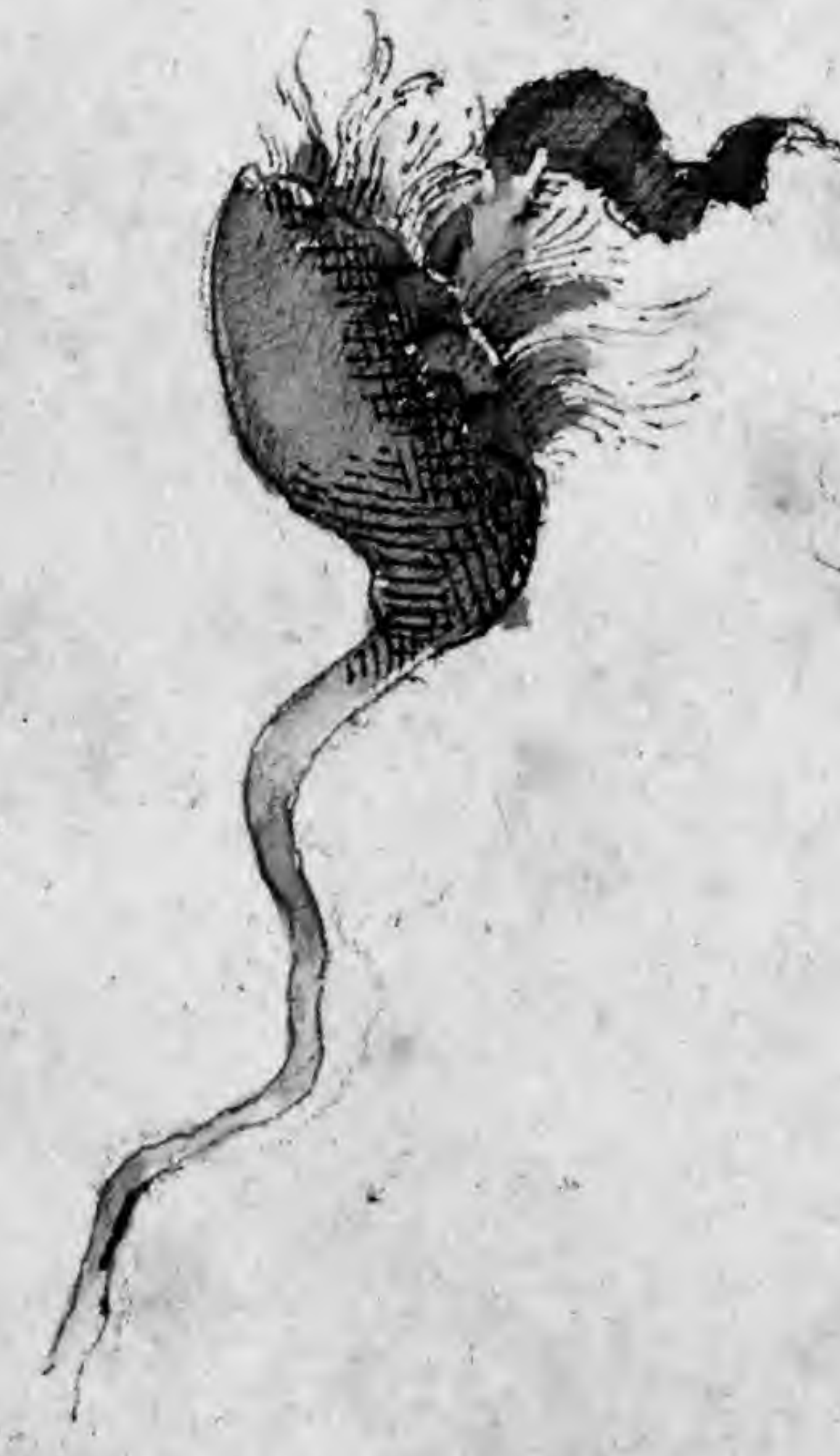
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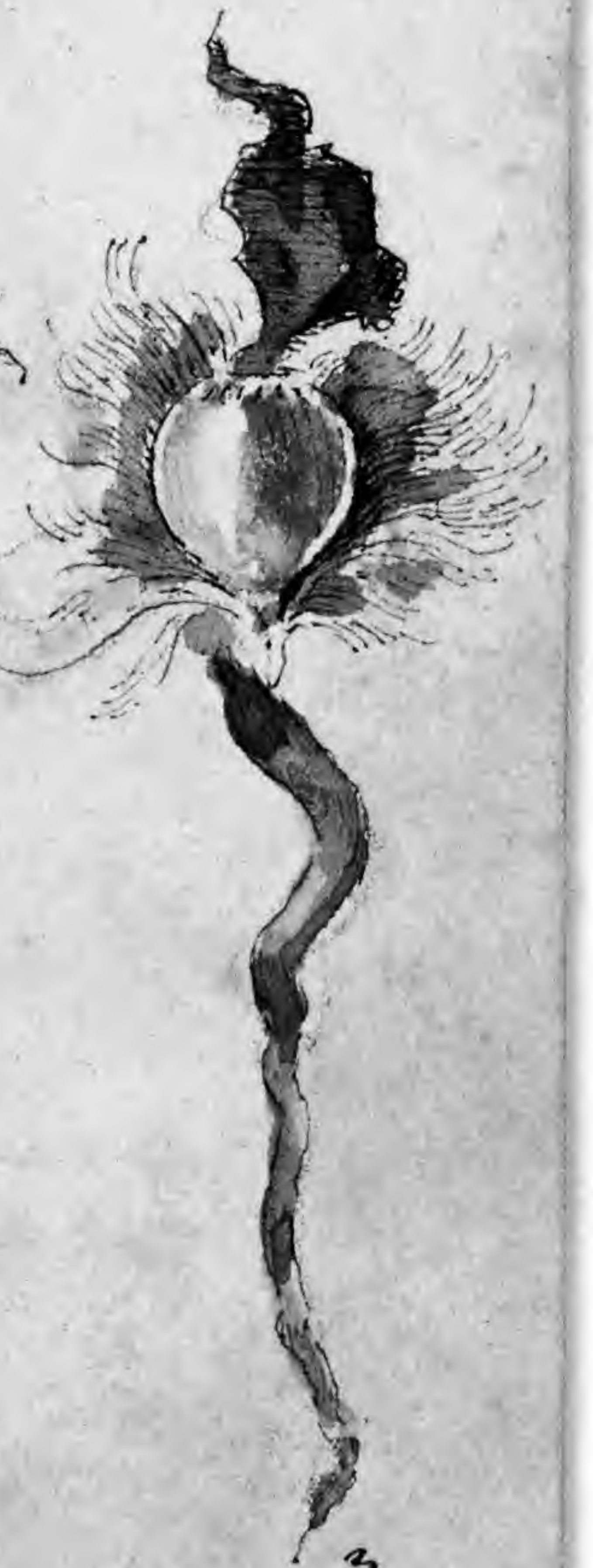
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A. Schott fecit 1852 Octob.

Dr. Georg Engelmann.

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1 Durchschnitt der Blumenkrone u. d. ~~Stift~~ Stiels
2 Profil einer Schuppe mit eingeschloss. ~~Bl~~ Wolle.
3 Blumenknospe mit unterständ. Wolle.
× 4 Petal mit gewimpert. Rand u. Mittelrippe
5 Petal ~~[illegible]~~ einfach.
6 Pistill und Narbe.
7 Filament u. Anthere.
8. Samen.

Details von 1–5 natürl. Grösse; von 6–8 vergrössert.

2. Schuppe aus dem Centrum, welche stets die fruchtbaren zu sein scheinen. Unten Faserbündel, weiße
mit denen die andern Schuppen des [illegible] bis
Wolle füllt die Basis des Ovariums umgebend u. d.
Achsel der Schuppe.

3. Blumenknospe fast farblos, da sie gänzlich von d. Schuppe, der Areola und d. Wolle von der Luft abgeschlossen und verborgen ist.

×4. Gewimpertes Korollenblatt, wie ich es an dem ersten Exemplare fand, welches an Grazie u. Schönheit der Blumen alle übrigen übertraf.

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Anhalonium vermoosum

~~acaule~~ depressum, tuberculis ~~basi~~ foliaceis complanatis epidermi dura ~~tectis~~ deltoideo-retusis deinis superne incrassatis triquetris, acutis, ~~deinde~~ obliqui ~~sparse superne~~ triangulatis ~~deltoideis~~ ~~retusis~~ sulcis ~~longitudinalibus~~ 3 (mediano profundiori villosissimo ~~lateralibus~~ levioribus levibus), ~~transversalibus~~que pluribus exarata ~~et~~ unde in vermoas plurimas depressas divisa margineque crenata; —

tubercles in 5-8 spiral rows —

Engelmann.

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Dr Engellmann.

My Sister has had the fever again as strong as she had yesterday. She has but three quinine pills left. If you think it advisable to increase the dose tomorrow, will you be kind enough to send her some, and specify how many she must take

I am with regard
Yours
C. Polkowska.

3531

Mamillaria. Schottii. n. sp ?

Axis flattened-hemispheric. 4½ inch diameter vertical diameter 2½ inch - Composed of spiral rows of tubercles nearly horizontally disposed -

Tubercles triangular, thickened or pyramid shape. extending horizontally smooth & carinate below, rugose-tuberculate, or furrowed above terminating in a blunt point - without spines!

Marked above by a fissured areolae bedded with long wooly fibres - vertex of the main axis very wooly surrounding the flower. Length of larger tubercles measured along the line of the fissured areolae 1¾ inch. - breadth 1¼ inch

Flower pink - (outer) sepals whitish fleshy obovate mucronate (inner) longer (1 inch) spathulate mucronate slightly lacerate. tube short

Stamens numerous over half the length of the petals a little shorter than the radiate stigmas

Pistil 7/8 inch long slender below with 8 stigmatic rays above slightly spreading & partly bifurcated

Hab - Crevices of siliceous limestone & cretaceous rock. Cañon Rio Grande full grown plant resembling in external appearance a pine cone with thickened scales -

Dr Parry Nov 1852

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+ The flowers (in Schott's specimens) are about 2 inches long, somewhat campanulate; petals "lemon yellow" with a brownish tint" along the midribs. Base of tube naked, the filaments separating about a line above, from the (common) mass of the tube Stigma with 13 filiform stigmata. –

Herrn D^r^ Engelmann

3533

ones they are often over one inch distant. The 4 principal central spines are 2–2½ inches long; the ~~upper and lower~~ lateral ones more quadangular, the upper and lower ones flat the former ~~above~~ carinate above, the latter below; this one rather the longest, and ½–1¼ l. broad; ~~somewhat~~ curved at the point or almost straight, never in the specimens before me, hooked. All the other spines are ½–2 inches ~~long~~, the lowest one only 1 inch long; ~~the~~ three to five ~~[illegible]~~ radial spines are arranged below the 4 central ones, and 3 to 5 above them, 3 of which are ~~[illegible]~~ generally ~~brought into the center~~ ~~[illegible]~~ pushed into the center by the flexuous bristly spines which fill up the space between the lower and upper radial ones and partly surround the latter; thus it may be assumed that in the fully developed plant 7 central spines are found.

At the upper end of the Areola we meet with the same obtuse cylindric lignous (when young fleshy) glands which divide the spiniferous from the floral areola in Ech. setispinus and its relatives; they appear only during the flowering period and on floriferous areolae, and are ~~probably~~ analogous to the hemispherical glands in the groove of the tubercles of some Mamillariae, which have therefore been distinguished as "glanduliferae". These glands in our species I find 3–5 in number about 1 line long. ‡

The single fruit before me is globose, 8 l. in diameter, crowned by the ~~[illegible]~~ remains of the flower, ~~altogether~~ near 2 inch long. Dr Le Conte ~~remarks~~, has noticed "~~a crown of yellow~~

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" yellow fruit, apparently 2 to 2½ inches long forming a crown on the plant." The dissection of the dead flowers shows a structure very similar to that of E. Wislizeni; petals apparently fleshy and narrow; stamens numerous, ~~very few~~ none from the base ~~of the tube~~, mostly from the middle and the upper thickened edge of the short tube. Style 10 li. long, divided nearly down to the middle into 14 suberect filiform stigmata. Seed black, oblique obovate, compressed, carinate on lower part of back somewhat shining and very slightly pitted; 0.8–0.9 l. long; hilum small, oval; albumen rather small, embryo ovate straight, with short hooked cotyledons.

Echinocactus Wislizeni is distinguished by the less flattened, less flexible, stouter spines; the lower central one being channeled, and strongly hooked; the distinction indicated by the ~~hooks~~ spines is confirmed by the shape and structure of the seed, and thus the plants ~~found~~ on the Colorado ~~plant~~ and those on the Rio Grande proved to be distinct species, representatives of the same ~~form~~ type in different regions. —

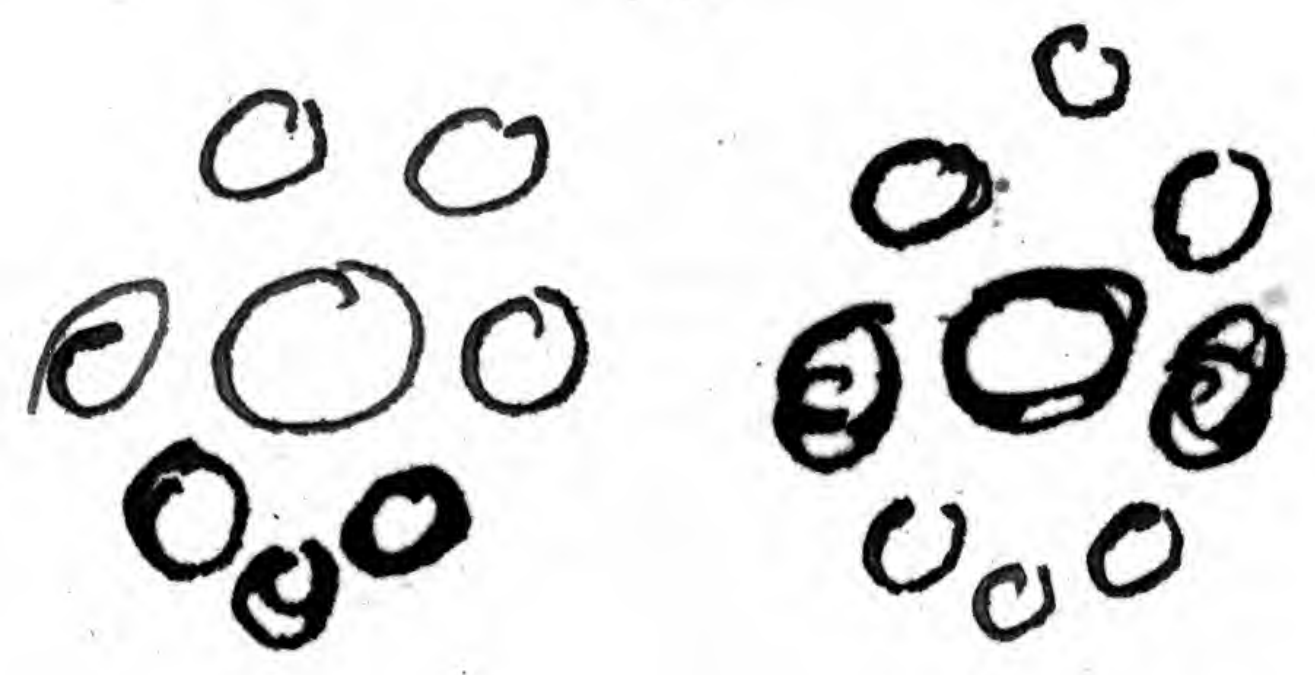
there are only 3 lower and 3 upper stout radial sp. all others are flexuous & bristly

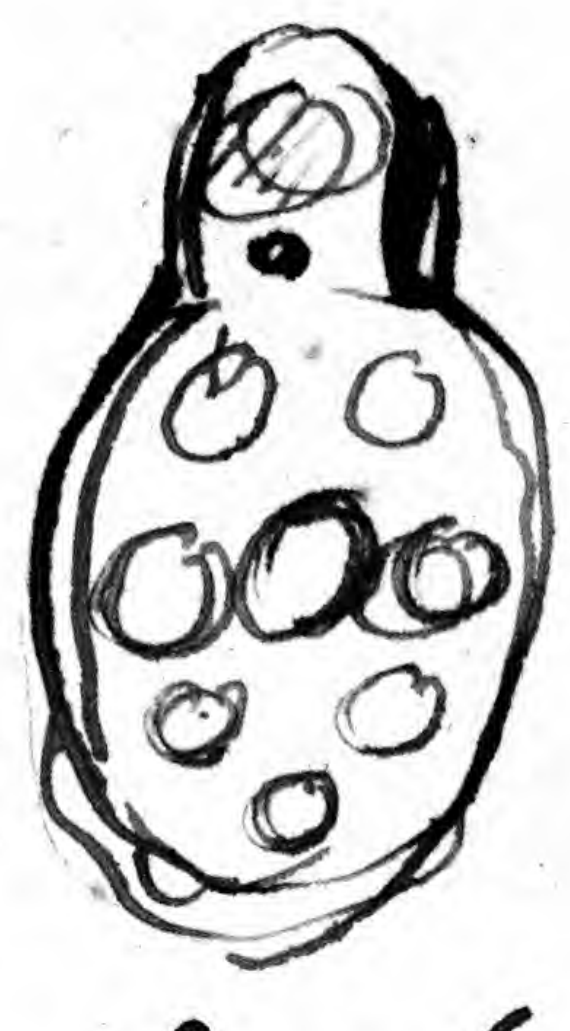
E. Wisl. giganteus globoso-ovatus costis 21 compressis crenato interruptis, areolis elongatis; aculeis radialibus patulis, summis infimisque sub 6 robustis, rigidis (subannulatis) lateralibus 14 20 (additis subinde summis fasciculatis) ~~tenuioribus~~ brevioribus tenuioribus ~~albidis~~ tenuibus elongatis flexuosis; centralibus 4, ~~robustis~~ crassis angulatis, annulatis rubellis 3 superioribus rectis ~~recurvis~~, inferiore ~~longiore~~ canaliculato dorsum hamato. basi ~~[illegible]~~ [illegible] -indicata

Echinocactus Bigelovii E. see pag 281

globosus, ~~pauci~~ ~~8-12~~ costis 8-13 tuberculatis interruptis; tuberculis prominentibus obtusis, distantibus; areolis ovatis, aculeis ~~[illegible]~~ omnibus subaequalibus robustis, annulatis ~~paulo~~ sub compressis, recurvatis s. rectiusculis fuscis radialibus 7 (6 lateralibus singulo breviore inferiore) s. addito summo, rarius 8; ~~1½-2 poll.~~ versus apicem corneis centrali singulo robustiore tarditiore paulo longiore ~~deorsum~~ porrecto s. deorsum deflexo arcuato s. subuncinato.

Coll. Probably on the Mojave and mixed with E. Engelmanni. The only specimen preserved ~~shows~~ is 9 inches in diameter, subglobose, contracted and almost stiped below. On the lower part the areolae are elevated on distinct ovate ~~or subconfluent~~ tubercles, which higher up become connected ~~arrange~~ ~~themselves~~ in 8, and on the upper part of the plant in 13 ribs. Tubercles on upper part of plant ~~about~~ ½ ~~to~~ ¾ inches in diameter and of the same height. Areolae 1½ inches distant, ½ inch long, a little less wide; the floral areola ~~smaller~~ closely connected with the former, separated from them by one to 3 indistinct subglobose glandular bodies half or entirely hidden in the tomentum. Radial spines 1½ – 2 inches long, ~~the~~ ~~4~~ upper lateral longer and stouter, the 2 lower ones more slender, the lowest spine the shortest (1 – 1½ inch long) ~~straight~~ ~~curved~~ like the others or rarely hooked (similar to that sp. in E. virid.); ~~the eighth~~ upper spine ~~is~~ ~~mostly wanting~~ similar to the other radial spines is rarely present ~~or if present resembles the upper lateral spines~~. The central spine is ~~shorter~~ ~~longer~~ about 2 inches long, more terete, at the point strongly recurved or sometimes ~~[illegible]~~ almost hooked — Spines of a reddish brown





Areola

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colour, lighter horncolour, and somewhat transparent at the tip

This plant in the number and colour of the spines seems to approach to *E. Emoryi* found by Maj. Emory on the upper Gila in October 1846, and described by me from Mr Stanley's ~~painting~~ sketch — but this has over 20 sharp ribs, and straight spines

see pag 105. 153

Echinocactus Parryi (albispinus) simplex globosus s. ~~globoso~~ depressus, ~~13 costatus~~ 13 costis tuberculato-interruptis, saepe obliquis; areolis orbiculatis s. areola florifera ad... ovatis, albo-tomentosis; aculeis omnibus robustis angulatis, plus minus compressis albidis, radialibus 8–11 rectis s. paulo curvatis, superioribus debilioribus lateralibus robustioribus, infimo deficiente; centralibus ~~robustioribus~~ 4, ~~3 superioribus~~ robustioribus paulo longioribus, 3 sursum versis, singulo inferiore validiore, longiore, curvato deflexo — flore? — ~~bacca~~ sicca oblonga ~~tomentosa~~, squamis aristato-spinosis tomentoque denso albido investita, flore coronata.

Found by Dr Parry in January 1852 and by Mr Wright and Dr Bigelow in April of that year in a region between El Paso and Lake Guzman, 60 or 80 miles in extent. — I have before me only a few bunches of spines coll by ~~Mr~~ Wright; the other data are obtained from Dr Parry's notes. The plant is about 8–12 inches high by 10–15 in diameter always simple the ribs are interrupted; the upper tubercles less distinct and flattened sideways, the lower older ones are transverse and very distinct. grooves between the ribs 1 inch deep.

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Cact 50 | Aug 1855 197.

Areolae ½ inch in diameter, orbicular but with the floriferous areola, which is closely connected with it, oval, 9 l. long. Radial spines in my specimens ~~about 9~~ 8 or 9 (12–16 l. long) but according to Dr Parry's notes often as many as 11; lower ones diverging, stoutest, upper ones more slender; ~~the 4~~ central spines 4, stouter, and longer, (1½–2 inches long) somewhat bulbous at base; upper and lower one, especially the last, stoutest, and longest.—

This plant is evidently nearly allied to E. Engelmanni, but appears to be distinguished by the ~~whiter spi~~ simple rather depressed heads, and the whiter spines. The fruit evidently resembles that ~~of the~~ different species of this section; and only the seed which unfortunately has been lost will ~~give us~~ definitely decide about the ~~identity or~~ distinctness of both plants which is strenuously maintained by Dr Bigelow who has seen both ~~species~~ in their native wilds.

bicolor Gal. var.) see p 223

Echinocactus Schottii simplex ovatus, s. ovato-cylindricus, costis 8 obtusis, tuberculato-interruptis; aculeis radialibus 15–17 rectis inferioribus brevioribus (basi bulbosis rubello-) tenuioribus, variegatis, summis 2–4 longioribus latioribus compressis, albidis; centralibus 4, ~~rectis~~, albidis; summo latiore longiore supra plano, infra carinato recto s. pendulo sursum curvato, reliquis ~~teretiusculis~~ ~~angul~~ compressis s. subteretibus, brevioribus, rectis.

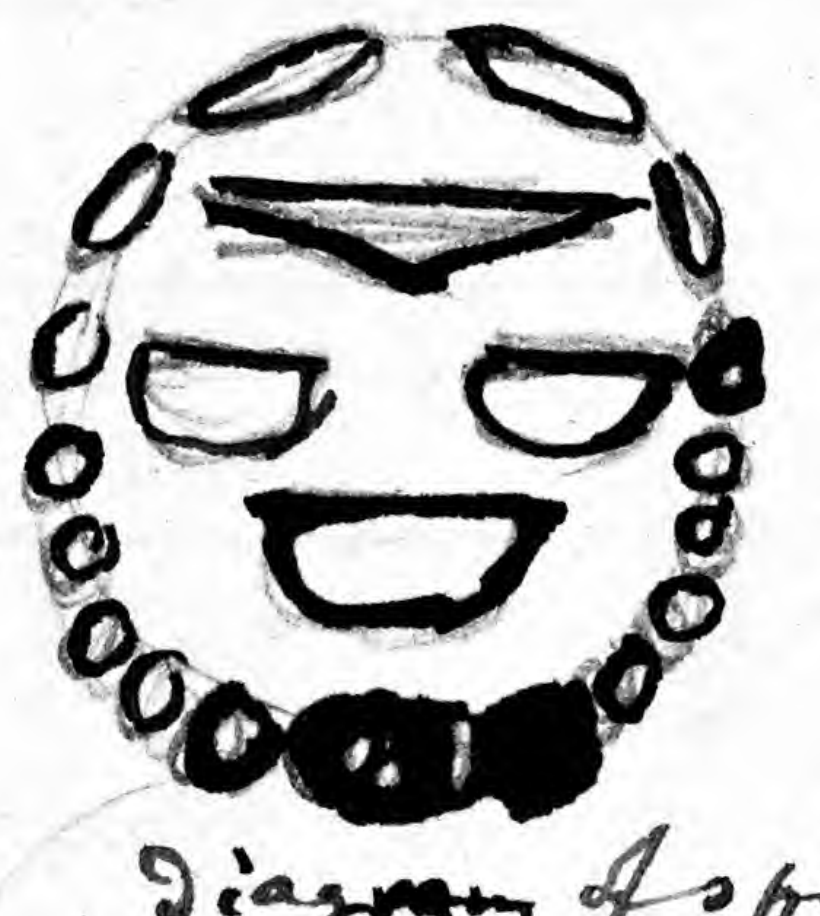

Diagram of spines but the lower radial spines not larger than others

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majoris
floribus in vertice tomentoso sub-
centralibus; ovario squamis sepaloideis
10-12 reniformibus margine ciliatis
stipato, sepalis tubi ascensione majo-
margine pallidioribus ciliatis
ribus, sub 40, ~~obtusis~~ summis
oblongis; petalis purpureis;
stigmatibus 8 suberectis

This elegant and distinguished
Sept 1853
species was collected on a ~~g~~[illegible]
covered by chaparral
hill range ~~ridge~~, near Mier, a few miles
above the mouth of the Rio Alcan-
taras into the Rio Grande, by
Mr Arthur Schott ~~in Sept 1853~~.
who notwithstanding his arduous
duties in the field, found time
and often
to observe and collect ~~many~~
even sketch interesting plants, ~~after~~ in whose
honor I have named this species.
It was found in full flower in
September; no fruit was ~~notice~~ seen
Mr Schott informs me that his
plant is 4 to 6 inches high
by 2-3 in diameter; the grooves
between the interrupted ribs are
~~rather~~ shallow; orbicular areolae
when young ~~straight~~ covered when
young with ~~st~~ thick white wool,
naked when old; floral areola
attached
closely to the spiniferous one,
without the cylindric gland of
E. setispinus. — The 2 upper flat
white radial spines about 1 inch
long the next pair narrower white
all the others subterete, ~~whitish~~
paler at base and tip and red
in the middle; the lowest is
the weakest and shortest, some-
what curved. Upper central spi

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15–20 l. long the 3 others shorter the lowest central spine flat above rounded below, often somewhat reddish, like the lower radial spines. Flower between 2 & 3 inches long petals bright purple or rose-purple gradually paler in fading. Filaments from base of tube.

The shape and colour of flower as well as to some extent the arrangement of spines approaches this species to E. brevihamatus; but the want of a hook, the fact that the upper (central and radial) spines are the largest and the 8 ribs distinguish it from the whole section to which E. brevihamatus belongs. It seems to be more nearly allied to ~~[illegible] it belongs to the [illegible]~~ to ~~of~~ E. bicolor ~~&~~ and E. porrectus. see 223

Mus

Echinocactus ~~pulchellus~~ ~~parvus~~ Scheerii Salm ~~parvus~~ globosus, ~~s.~~ ovatus, costis 13 obtusis profunde incisso ~~interruptis~~, tuberculis ovatis obtusis supra ad medium sulcatis; areolis ~~orbiculatis~~ subovato-orbiculatis, junioribus albo-tomentosis; aculeis radialibus 15–18 setaceis rigidis, rectis s. plerumque paulo recurvatis, albidis stramineisve, apice fuscatis; ~~summo~~ tantopere elongato; centralibus ~~3~~ -4 angulatis variegatis fusco-atris, superioribus rectis sursum divaricatis, ~~[illegible]~~, inferiore porrecto ~~hamato~~ breviore. Floribus in vertice laxis; sepalis exterioribus 13 squamiformibus, inferioribus ~~appendiculato~~ acuminatis, margine membranaceo laceris ciliatis ve, superioribus ovatis integris [illegible], sepalis interioribus 8 lineari-oblongis obtusis s. intimis mucronatis; petalis 13 lineari-lanceolatis acutis, flavo-virescentibus; stigmatibus 8 linearibus flavidis. — bacca virescente vix squamata; sem. ~~[illegible]~~ naviculatis ovatis compressis fuscis, minutissime tuberculatis, hilo

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200. ~~[illegible]~~ magno circulari

This ~~pretty~~ elegant little species was discovered near Eaglepass by (Dr Bigelow and Mr Schott.) The ~~latter~~ former collected the flowers there from August to October 1852, – the latter sent living specimens. The specimens before me are 1½ to 1¾ inches in diameter and of the same highth. The ~~root~~ long ~~terete~~ (white fleshy) root, about ½ inch thick distinguishes this species from all our other Echinocacti. The tubercles also are more distinct, and less plainly arranged in ribs than in any other of our species; they are (somewhat compressed) between 4 and 5 lines high, of the same transverse diameter and a little longer in the direction of the ribs, the areola ~~is~~ is about ½ l. long a little longer than broad; it extends upwards into a tomentose groove 1–2½ lines long, which terminates in the floriferous areola, about halfway down to the axilla of the tubercle. This groove is much shorter or almost wanting on such tubercles that ~~bear~~ no flowers.

The ~~radial~~ exterior Spines, are with their bulbous ~~compressed~~ bases closely and regularly arranged all around the areola, and are appressedly radiating; in younger plants I find 11–13 in older, flowering areolae always from 15 to 18 or ~~20~~. They are of almost equal length, 3–5 l. long or the lateral ones a little longer than the rest; ~~the upper most ones~~ The uppermost radial spine is often somewhat stouter & elongated, ~~as if ranging itself with~~ ranging rather as an upper & 4th central spine.

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Cactaceae 51 }

Aug. 1855

~~the central spines~~. The ~~two~~ upper
2 in my specimen from Eagle Pass, 3 in Schott's original plant
central spines somewhat compressed and angled are stouter, generally
~~red~~ brown or black on the upper and
whitish or mottled on the ~~under~~ lower surface; or the ~~upper~~ straight
spines are ~~only~~ lighter throughout, with black tips;
the hooked spine is black ~~above~~ on the upper side, especially at base,
white below, again white on the
outside of the curvature and entirely
black ~~at~~ within and the hooked point; the former are 8–12 l. ~~long~~,
the latter only 6–9 l. long. —

The green flowers are about
1 inch long, but much less in
diameter even when fully open.
~~Fruit and seed unknown~~ #
This species is nearly allied to E. brevihamatus, but is a much smaller plant distinguished by the cylindric long root, the very distinct radials, not compressed & slender, much smaller spines, more numerous and more regularly & closely arranged spines, green flowers; fruit is not known of either.

sce 105 **Mam. Caesiacantha**, fl. St. Louis May 7th 1855

floribus lateralibus, sepalis 13, ~~apiculatis~~
obtusis ~~mucronatis~~, superioribus mucronatis
petalis uniseriatis 13 ~~oblongis~~ obtusis s.
emarginatis ~~patulis~~ erectis ~~subcrenulatis~~;
stylo stamina brevia longe superante,
stigmatibus 4–5 only brevibus erectis conniventibus.

Flowers 6 l. long and when fully open
of same diameter; protruding about 3 lines
above the spines; petals white with
a red streak in the centre, which ~~at base inside~~ at base
forms a striking red ~~field~~ around the yellow
stamens; style yellowish with 4 or 5
yellowish green stigmata, which form together
a short globose head.

fruit (according to Dr Poselger who says he saw a sp. of the Plant) are to said small, green and almost naked † seed large and brown! the only brown Ech. seed known to me 0.8 l. wide by 0.9–~~1.0~~ l. long — very minutely & delicately tuberculate; album very inconspicuous; embryo curved, cotyledons small more like those of a Mammillaria on top, not at the end of the curvature like in all other Echinocacti known to me

Mam. Schiedeana Ehrenb. is similar
but has much larger very woolly axillae, larger tubercles
(and spines terminated by a silky brush)
acute petals; fruit similar, seed black!:

Mam. Greggii parva simplex globosa ~~umbilicata~~ tuberculis (~~[illegible]~~ ~~breviter globoso~~ ovatis) globoso-ovatis minutis; aculeis setaceis

rigidis cinereo-albidis ~~plur~~ 2-3 seriatis, interioribus 5-7 brevioribus robustioribus, omnibus radiantibus; in plantae adultae tuberculis junioribus aculeis ~~superioribus~~ areolae laxe lanatae 6-9

~~multo~~ longioribus apice clavatis acutis ~~demum~~

~~longior~~ ~~refractis~~ fragilibus; baccis clavatis nudis coccineis, seminibus obovatis basi acutis hilo maximo ovato scaphoideis

minutissime ~~tuberculatis~~ nigris sub lucidis.

On a mountain ridge between Azufrosa and Penos Bravos near Saltillo, in fruit in September. Dr. J. Gregg 1848. – Plants 2-3 inches high "Gregg" – my "specimens only 1 ~~1/2~~ 2 inches in diameter; tubercles about 1-1½ l. long;

15-18 exterior spines ½-2 l., interior ones stouter, only ½-1 l. long, all radiating; on the upper end of the areola are in the full grown flowering spec. 6-9 longer spines (2-4 l. long) ~~white~~ imbedded in long loose wool thicker at base, very slender in the middle & clavate towards the very acute point. These spines when a year or two old break of at the slender portion in the middle but can always be distinguished from the other spines by never being pointed but having a ~~[illegible]~~ ragged end when broken.

Fruit 9 l. long clavate, – seed 0.6 – 0,7 l. long

This species ~~ist~~ is M. missouriensis ~~for~~ nearly allied to but readily distinguished by the larger size of all parts, the ~~stouter~~ & fewer spines and the somewhat smaller and distinctly tuberculated seed.

The long fragile spines in the full grown plant present a curious feature, and with the long wool (about ½ of the length of those spines) form a tuft at the upper part of the plant, from which protrude flower & fruit. It is a question with me whether the flowers are actually central in these two species, and whether the plant should not be arranged with the Coryphanthae; I have not seen the ~~latter~~ Greggii in the living state, and of M. missour. only young ~~living~~ plants with the tuft not yet developped; the dead specimens of both species show the fruit very nearly central in the dense tuft.

M. microthele Mühl (from Mexico?) seems to be very nearly allied to these species, ~~but the~~ especially to the last one, but is cespitose has 2 central spines and no mention is made in the description of the curious tuft and the clavate spines so characteristic of both our species. ~~It is also~~

M. Greggii is only a larger, fewer spined var. of M. missouriensis, with more distinctly tuberculate seed.

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Mam pusilla var Texana
Dr Bigelow Santa Rosa
ovato-globosa prolifera caespitosa
tuberculis ovato-cylindraceis, teretibus,
axillis albo lanatis, setosisque; aculeis
pluriserialibus, extimis numerosissimis
(30-50) capillaceis elongatis crispatis
laevibus albidis, interioribus 10-12? sensim
rigidioribus ~~brevioribus~~ retrorsum puberulis albidis
intimis 5-8 longioribus rigidis rectis! pubescentibus basi bulbosis,
~~pubescentibus~~ supra albidis s. flavidis ~~supra~~
rufis fuscis ve inaequalibus; — floribus lateralibus
ovario submerso
sepalis 9-11 oblongo linearibus, obtuso-
usculis, tenuiter fimbrillatis; petalis 13-16
uniseriatis, oblongo linearibus, obtusis
versus apicem erosis
s. emarginatis, saepe mucronatis,
~~stigmatibus~~ sub-5 erecto-patulis
flavidis longe supra stamina exsertis;
bacca elongata obovata s. subcylindrica, scarlatina,
floribus rudimentis involutis coronata;
~~seminibus~~ ~~nigris~~ obovatis scrobiculatis,
nigris lucidis hilo lineari.

— Santa Rosa, Dr Bigelow, coll Jan
1853, fl. St Louis April June 1853. —
Heads 1-1/2 inches in diameter; tubercles
3½-4 lines long, dark green; ~~coarse~~
axillae quite woolly, with several coarser
curled bristles; ~~spines~~ Exterior
spines covering the whole plant, as
if it was enveloped in coarse wool
often when straightened 6-8 l. long, but
curled up, interior spines slender but
quite stiff, and pointed, 3-4 l. long
in young or weakly specimens whitish
with dark tips, in robust ones
yellow at base, ~~brown~~ above and almost
blackish tips; —

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Cact. 52

August 1855

Flower 7-9 l. long, petals yellowish with a reddish streak; — fruit 3/4 inch long, seeds hard, brittle, 0.6 l. long — very similar to fruit and seed of M. lasiacantha, only a little larger. — — — —

This plant is very nearly allied to M. pusilla DC, from the West indies.

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Mamillaria sphaerica Dietrich

vide Poselger in Allg. Gart. Zeitung 1853 pag 94 —

~~prolifera~~

prolifera ~~caespitosa~~
~~simplex~~ obovata, clavata tuberculis ovato elongatis versus apicem conicis axillis lanatis, areolis juvenilibus breviter tomentellis, aculeis setaceis, rigidis? rectis s. curvatis albidis radialibus 12–14 centrali singulo recto subbreviore vix robustiore; subulato fl. ovarium emersum tubo supra ~~tubo~~ elongato, petalis flavis sub 18 acuminato aristatis, stigmatibus 8 brevioribus petalis; fruct.?

acutatis

basi bulbosis ~~compressis~~

stricto ~~contracto~~

integris

Hillsides on the Rio Grande near Eagle pass coll. in flower March 1852 by A Schott. Specimen before me is 2 inches high, ~~1~~3/4 in diameter above ~~[illegible]~~ narrowed below, the old tubercles ~~dessicating~~ up and leaving a short ~~clavate~~ stem. Tubercles 6–8 l. long; Spines 3 1/2 to 4 1/2 l. long. Flowers 1 1/2 – 2 inches long, yellow.

scaly

Poselgers description perfectly well agrees with my plant. His was collected at Corpus Christi.

Mamillaria Nuttallii ~~simplex s. caespitosa~~ ramis ex tuberculis sulcatis
~~globos~~ globosa, simplex s. prolifera caespitosa
~~axillis nudis~~, sulcis tuberculorum junioribus barbatis?
~~tomentosis~~, basi villosis; areolis junioribus
~~parce~~ albo tomentosis; aculeis radialibus
10-17 rectis s. parum curvatis, ~~plerumque~~ plerumque pubescentibus, albidis, apice saepe ~~fuscatis~~ adustis
inferioribus superioribusque tenuioribus lateralibus
longioribus robustioribus, centrali singulo
(rarius binis) robustiore s. deficiente.
pubentulis, ~~laevi~~; floribus subcentralibus,
~~sepalis~~ ~~plerumque~~ lanceolatis s. linearis lanceolatis acutis
sepalis 10-25 fimbriatis, petalis 14-30 ~~acutis~~
~~integris~~ ~~aliis~~ s. apice parum denticulatis ~~acumin.~~
acutis mucronatis s. acuminatis flavis s. flavo-virescentibus demum saepe rubellis
stigmatibus 3-8 albidis erectis ~~obtusis~~ s. patulis;
bacca lateralis subglobosa tuberculis breviore simulatur, demum flor. ~~marcescente~~
dejiciente; seminibus ~~globosis~~ (nigris) duris
scrobiculatis;
Mam. simpl. Torr. & Gr. Fl. p. 553 non Haworth.
Cact. Mam. Nutt. nom. in

α. borealis (M. Nuttallii E. Pl. Fendl. p. 49. 1848 in
subsimplex ~~tuberc. ovatis~~ aculeis radialibus setaceis ~~tenuioribus~~ 13-17 ~~pubentulis~~
centralique pubentulis (saepe deficiente), ~~stigmatibus 2 ad 5~~ erectis, floribus
baccis seminibusque minoribus.

~~Both Mo. from Fort Pierre to the~~
~~Yellowstone Nuttall, Hayden etc. —~~
~~Dr Hayden has not named~~

β. ~~similis~~ caespitosa (M. similis E. in Pl. Lindh. 1845) (~~M.~~ similis β caespitosa E. in Pl. Lindh. 1850)
caespitosa tub. ovat. aculeis radialibus ~~tenuioribus~~ 12-15
pubescentibus centrali plerumque deficiente
floribus baccis seminibusque majoribus stigmatibus 5-8
petalis,

γ. robustior E. Pl. Lindh. 1850
subsimplex tub. cylindr. aculeis robustioribus, laxioribus ~~latioribus~~
radialibus 10-12 centrali singulo; floribus ~~majoribus~~
stigmat. 7-8 petalis baccis seminibusque ~~ut~~ in β

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In the plains east of the Rocky Mtns; α has been found only in the Missouri country from Fort Pierre westward discovered by Nuttall, ~~collected since~~ repeatedly and ~~lately~~ particularly ~~within the~~ in the last years by Dr F. V. Hayden — Var β has been discovered by F. Lindheimer — in Texas ~~between the Brazos & San Antonio Rivers~~ southwest of the Brazos — and principally in the country watered by the Colorado: var γ has been found by the same in the same region and lately by Dr Bigelow on the Canadian.

cespitose
I have a form collected in the neighborhood of Fort Riley on the Kansas River which seems intermediate between β & γ.

The globose heads are from 1½–2 inches diameter; the cespitose masses of β are often a foot in diameter. — Tubercles in 8–13 spirals in α & β 3–4, in γ 5–6 lines long; in the fully developed part of plant grooved to the base, where the groove expands into a woolly floriferous areola; the axilla proper, however, is not woolly. — Spines ~~3–5~~ α & β 3–5 in γ 4–8 l. long; ~~in those of [illegible]~~ ~~in most~~ in the 2 former the central and the lateral radial spines are pubescent, but hardly ever the upper and lower ones. ~~—~~ Flowers subcentral or by the rapid ~~protr~~ growth of the plant more lateral ~~1–2 inches long;~~ ~~[illegible]~~ ~~[illegible]~~ & bright yellow, yellowish green or ~~with~~ of a reddish straw colour; in α 1–1¼ inch long with 10–13 sepals & 17–23 petals and 2–3 rarely 4 or 5 erect stigmata; ~~seeds 0.8 l. long~~ ~~s~~ base of the flower tube about 1 line high naked, i.e. without free stamens

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flowers in β. 1½–2 inches long, with 15–20
sepals ~~and~~ 20–25 petals, & 5–6 stigmata –
in γ. of same length, with 20–25 sepals
~~and~~ 25 30 petals & 7–8 stigmata
Berry ~~dark~~ 3–5 l. in diameter shorter
than the ~~tubercles~~; ~~seeds~~ almost globose in α 0.8', with a hard & brittle shell
~~and~~ in β & γ 1.0–1.1 l. long; ~~with~~
distinctly pitted; hilum linear oblong.

Mam. calcarata. globosa ~~ex~~ tuberculis
sulcatis prolifera caespitosa, (rarissime simplex)
~~tuberculis~~ e basi dilatata ovatis s. ovato-~~cylindricis~~
elongatis versus apicem conicis, supra
in planta adulta sulco (juniori barbato) notatis
in areolam axillarem villosam demum
denudatam desinente ~~notatis~~ exaratis,
areola novella albo ~~villosa~~ tomentosa
demum nuda, aculeis albidis apice superadultis ~~ex~~ radialibus 8–10 rigidis subulatis
additis subinde (aculeis adventitiis fasciculatis ex summa areola) 3–5 rectis, s. paulo recurvis
tenuioribus, ~~centrali~~ ~~nullo~~ s. singulo robustiore
e basi bulbosa subulato recurvo
(rarius binis superpositis, in plantis
junioribus deficiente). floribus e vertice
centralibus, magnis, ~~flavis~~ tubo supra ovarium protracto nudo; sepalis glabris 20–35
lanceolatis acutis s. acuminatis integris (ex viridi-flavis); petalis 30–35
lanceolatis, acuminatis aristatis versus apicem
denticulatis (sulphureis s. subinde stramineis) intus
basi cum filamentis miniatis; ~~filiformibus~~
~~filamentis~~ stigmatibus ~~7~~–10 radiatis flavis;
seminibus fusco obovatis elongatis laevibus. ~~lucidis~~.

From the Brazos to the Nueces Lindh. Wright.
Perhaps M. strobiliformis Muhlenpf. (non Scheer nec Engelm) coll 1848
by F. Roemer on the ~~Llano~~ is
the ~~same~~ species, – though nothing is said
in the descr. of the ~~characteristic~~ curvature
of the (spine) central, nor of the proliferousness.

Plants, heads 2-2½ inches in diam. and simple, mostly proliferous from the upper end of the groove, and very cespitose; tubercles mostly erect or somewhat incurved, adpressed, broad at base 7-9 l. long; × radial spines ~~4~~-7 approximating some 8 or 9 l. lg., central sp. 5-~~8~~ or 9 l. long, from a very thick bulbous base, recurved, ~~like~~

~~Flo~~ Flowers 2¼-2½ inches long, same diameter; tube elongated, protracted above the ovary, cylindric below and without sepaloid ~~spales~~ scales till it expands. — Petals wider and purer yellow in the plants from the Brazos and from New Braunfels, and 3½ l. wide, of a reddish straw colour and somewhat narrower in the Nueces plant; long acuminate and aristate; ciliate at base like the outer filaments; inner ones greenish yellow; filaments from the ~~base~~ of tube to the base and even the top of the ovary. Fruit ovate, ¾ inch long; seeds smooth, ~~dark~~ brown, 1.0-1.3 l. long, rather obtuse at lower end; ventral part compressed, sharp, back rounded; hilum small, oblong, towards the lower end.

in
× Younger plants shorter, more ovate, without a groove, and then always with naked axills; in the fully developed plants the groove extends to the axills and is there very woolly forming an "axillam lanatam" — is not the "wool or the bristles which often occur in the Mammillariae proper, a remnant of this areola florifera which is in the Coryphanthae connected with the areola spinifera by the groove?

Mam. scolymoides Scheidw. Allg. G. Zeit. 1841

globosa s. (ovato-globosa), subsimplex, vertice dense lanato
tuberculis e basi dilatata ovato conicis
superioribus ~~cylindraceis~~ elongatis, supra
sulcatis, areolam axillarem (junior villosissimam ~~tomentosa~~)
desinente notatis; aculeis erectis imbricatis radial. 14-20 ~~17~~ basi bulbosa subcompressa ~~arcte~~ serratis
~~rectis~~ s. plerumque paulo recurvatis,
albidis s. ~~[illegible]~~ corneis saepe apice fuscatis; inferioribus brevioribus
centralibus singulo s. in plantis adultis
saepe 4, longioribus, basi pallidis
supra fuscis nigricantibusve,
superioribus sursum versis cum radialibus implicatis, inferiore robustiore
longiore, obscuriore, deorsum curvato
floribus flavis - - - -

Coll. by Dr Bigelow near Santa Rosa
and by Dr Wislizenus near Chihuahua
(see pag 18) 2-3 inches high; tubercles
in 13-21 spiral rows, 5-8 lin long; rad
spines of very different lengths, in
~~smaller plants from Santa Rosa~~ 5-10 long
in larger ones the upper ones generally
the longest; upper central spines 9-12 or 14 l. about in
lower one ~~[illegible]~~ stouter, 9-16 l. long in old plants

Flower said to be yellow, purple at
base, 2 inches long etc —
evidently near my calcarata.

Mam. pectinata see pag. 130.

fl. July 13th 1855

floribus verticalibus, ovario globoso, tubo brevi, sepalis 30, acutis, aristatis, exterioribus lanceolatis ~~acutis~~ apice recurvis, interioribus oblanceolatis acutis, petalis 30 sulphureis, oblanceolatis, s. oblongis acutiusculis, s. intimis obtusis s. emarginatis, omnibus herbaceo-aristatis, stigm. 9–10 linearibus obtusis pallidis ~~albis~~ pallide flavescentibus stamina longe superantibus;

pluriserialibus

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~~Upper~~ floriferous tubercles cylindric with one or more subglobose glands in the upper part of groove, representing no doubt the cylindric glands ~~of the~~ below the floriferous areola of Ech. setisp. Flowers 2 inches long 2 3/4 in diameter, open from 9–12 closing towards one o'clock; ovary 3-4 l. long. Exterior sepals ~~recurved~~ at apex, reddish green with yellow margin, interior ones yellow with darker midrib. — Filaments covering the whole base of the tube — close to the style; red, short —

Flower very similar to that of M. calcarata, but shorter, tube much shorter; petals broader more obtuse

seed 0.9 l. long. obovate elongate, compressed, rounded at back, sharp at ventral part
rounded at lower point.
hilum small, narrow above the point
seed very much like that of M. calcarata

M. Echinus rad. sp. 19–21, 4 outer, lower one recurved, darker concolor; seed dark brown more curved than in the common form, 0.8 l. long — Presidio del Norte — Dr. Bigelow.

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Nuttallii ??

Hayden: Mam. vivipara — in fl. — May 12th
single or cespitose — fl. 1½ inch long —
~~[illegible] 5 green~~ — pistil green
& stigmata —

22 petals with 10–12 outer & only
between the forks of White River
acres are covered with it —

petals & sepals at base all ciliate
3–8 flowers on one plant.
Plant 2–3 inches diamt, deep
in the ground

[illegible] distinguish M.
sufficiently well from this plant
I shall have to mould the
accordingly;

M. vivipara Haw. char. emend.:
s. caespitosa, tuberculis longis s.
teretibus, in planta adulta sulco

Dr.

to B. Oench,

1855.

July 1. To Balance

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Cact. 54 | Aug 1855 | 213

Another form has been collected by Dr Bigelow at Santa Rosa
Aculeis radiantibus 16-17 superioribus fasciculatis, subulatis; 8-10 l. longis inferioribus 4-5 l. longis, ; centralis robusto, a basi crassa subulato recto 7-8 l. longo.

Could this be a form of scolymoides? Spines more slender, tubercles laxer. –

M. scolymoides, M Echinus, M. radians are nearly allied

Mam compacta flowers smaller than in any other of our Coryphanthae.
~~seed~~ Sem. globoso-obovatis, lucidis laevibus fuscis, hilo magno ovato elongato

Seed only 0.7 long, shorter than seed of M calcarata, but thicker with much longer & larger hilum, which occupies almost the entire ventral part.

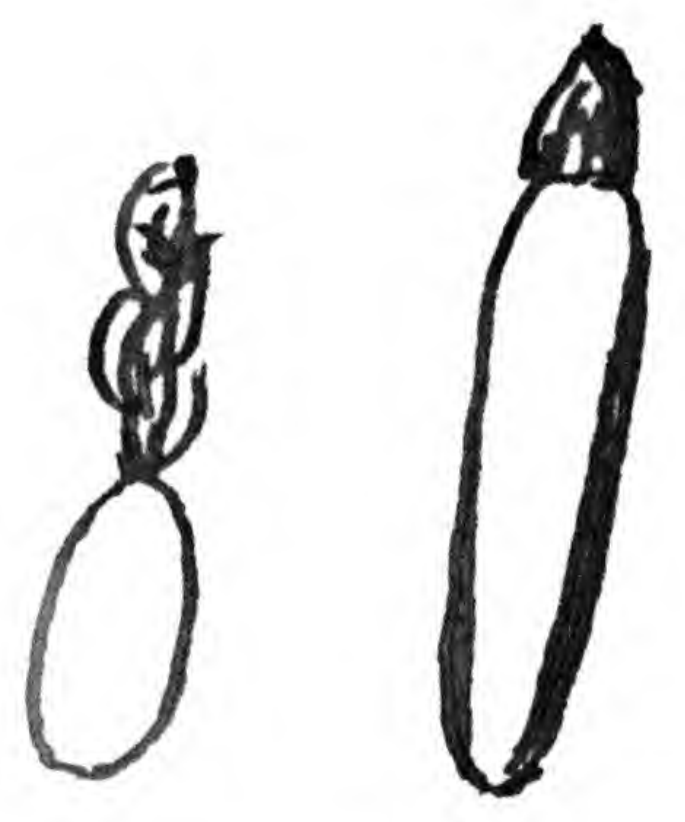
spines in some 4-6 in others 7-10 lines long.

Mam. tuberculosa Dr Bigelow collected on rocky places on the Florence Mountains below El Paso dried specimens with flower and fruit, June 21. – which I can not take for any thing else but Mam. tuberculosa

Tubercles corky 2 l. long, very woolly in axills
spines about 20 and 3-7 centrals, 3-9 lines long
flowers about 1 inch long, with fimbriate sepals
– All this agrees perfectly with M. tub.

but bacca elongata clavato-cylindrica rubra (8-10 l. longa) floris rudimentis brevibus (2 lines) coronata, seminibus globoso-obovatis, fulvis, scrobiculatis 0.6 lin longis,

see pag 143



fruits

hilo brevi ovato.

Every thing, the long red fruit, the short regularly shrivelled corolla and the large light brown seed distinguish it from the other form.

I shall have to describe the plant with the flowers and fruit here described and add that another form or another species with the small dark seeds and oval fruit must be looked for.

Mamillaria vivipara Haw. ~~char. emend.~~

Dr Hayden has sent many specimens again none of his has flowered this season but I have observed may 30th a flower on one at the house of a trapper, brought down by him (in the soil which produced besides numerous plants of Bouteloua! -

Single, globose, 3 inches in diameter; tubercles large, over 6 l. long. flowers not quite central, but younger buds are; fl. 1/2 inches long; sepals nearly 30; fimbriate, 18 exterior ones reflexed, about 12 interior ones of same length as petals 25-30 petals, lanceolate acuminate, aristate; anthers orange; style long exserted, 10 linear stigmata with very short mucro

Haydens Spec. in flower May 25th 1856
another received from Mr Carrey
1852 in flower same day!
25 exterior sepals
20 interior ones
40 petals
Stamens from base of tube
stigmata 10, whitish
suberect; (obtuse ?)

filaments almost from base of tube
ovary very short, depressed
filaments. Berrys of Dr Hayden's specimens
1/2 - 3/4 inch long ovate s. globose-ovate,
not quite central; seed fulvous,
scrobiculate 0.6-0.8 l. long, with small oval
hilum.

Dr Hayden's specimens were simple or with a few compact heads+ (from the Black hills) or loosely caespitose, but only cultivated specimens I have seen so morbidly proliferous, as to destroy almost the plant. Proliferous always from the areola at the base of the groove. Often the whole (originally simple) plant covered with 20 or 30 sprouts.

+, this form seems a peculiar variety — heads depressed, its almost horizontal surface — fl. short, crowded spines short none seen in fl. or fr.

Rad. sp. 12-20 white, often brown at tips stiff;
Centr. sp. 3-8 stouter brown, the lower 3 or 4 ~~usually~~ the shortest, one only erect or somewhat deflexed, the others diverging laterally and upwards

I can not distinguish M. radiosa sufficiently well from this plant. I shall have to mould the characters accordingly:

M. vivipara Haw. char. emend.: simplex s. caespitosa, tuberculis laxis s. subimbricatis teretibus, in planta adulta sulco (juniore barbato) in areolam villosam axillarem s. superaxillarem desinente notatis, axillis ipsis nudis aculeis rectis rigidis; exterioribus patentissimis radiantibus albis apice saepe sphacelatis 12-36 inferioribus rigidioribus, lateralibus superioribusque longioribus tenuioribus cum brevioribus adventitiis

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additis; centralibus 3–12 robustioribus longioribus pl. m. purpurascentibus, fuscatisve, singulo robustiore porrecto deflexove, ceteris ~~longioribus~~ sursum-divergentibus; — floribus pag. 9. bacca — se.

α. vera depresso-globosa simplex s. caespitosa, ex sulcis tuberculorum saepe maxime prolifera; acul. rad. 14–20 centr. 3–8; floribus ~~[illegible]~~ subcentralibus; sepalis 30–40 petalis 25–40. stigmatibus 5–10 ~~petalis~~, (herbaceis apiculatis) albidis s. roseis, patulis; — baccis latentibus;

β. simplex
bei
(Hayden)

β. ~~γ~~? radiosa M. radiosa E. in Pl. Lindh. II & in Salm ~~Hort~~ Dyck. II. Ovata simplex s. e basi ramosa, aculeis rad. 12–36, centr. 9–12; floribus subcentralibus; sepalis 25–50 petalis 25–40, stigmatibus 5–10 obtusis, purpureis patulis; baccis latentibus.

see pag 140

c ~~α~~. radiosa Texana
b b. radiosa neomexicana
a α. radiosa borealis

~~These forms look~~
The extreme forms, the simple, cylindric M. rad. tex. and the low caespitose M. vivipara ~~vera~~ seem to be very distinct plants, but they show gradually transitions which force me to unite both forms. The caespitose growth, which is not constant and the apiculate stigma together with the more central flowers ~~[illegible]~~ ~~both forms~~ ~~are the only~~ do not seem sufficient to establish specific distinction. —

Seed with considerable albumen more than I find in any other Mammillaria embryo ~~terete~~, rather long, slightly hooked at the upper end and cotyledons pretty distinct; parallel! sometimes oblique and also sometimes as in other species 3!

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~~fissuram?~~ ~~fissuratum~~ fissuratum

Anhalonium ~~vermiculatum~~ ~~simplex~~

e radice crassa napiformi simplex
~~obconica~~, ~~depressa~~ globoso s. applanata, vertice
densissime villoso, tuberculis e basi
dilatata applanatis, crassis, triangularibus
obtuse carinatis
extus ~~supra~~ (inferne ~~gibbis~~) ~~[illegible]~~ s. ~~laevibus~~ versus marginem
corrugatum rugosis intus (s.
~~[illegible]~~, supra) ~~profunde~~ villoso sul
sulco ~~profundo~~ centrali villoso ~~centrali~~ lateralibus duobus
laevibus ~~excavatis~~ profunde quadripartitis, sulcisque transversalibus
in tubercula angulosa irregularia
numerosa multifidis divisis; — floribus e villo longo
~~sericeo~~ centralibus, breviter tubulosis; sepalis sub 20 ~~carnosis~~
superioribus lineari-lanceolatis integris
carnosis, superioribus albidis spathulatis,
mucronatis; petalis sub 12 spathulatis,
~~deflexe~~ versus apicem obtuse-mucronatis, laevis
s. integriusculis; roseis stigmatibus infundibuliformis, laciniis
5–10 ~~patentis~~ erecto-patulis; ~~baccis~~
baccis ovatis, pallide virescentibus coronatis, in lana
densa (occultis); seminibus globoso-obovatis tuberculatis
nigris, opacis. —

locality see pag. 152.

A very singular plant hardly ~~betraying~~
of the appearance of a Cactus! The Aloe shaped
tubercles which in other species of
Anhalonium are smooth or in one
groove, are here ~~cut up~~ ~~(by 3 longitud.~~
~~and numerous transverse grooves) into~~ covered above
by a great many ~~irregularly angular~~
tubercles or warts, whence the name.
~~The central groove (contains a long wool) in young tubers, in older ones it becomes matted and finally disappears.~~ — ~~The central longitudinal groove in the young tubercle~~
~~The young half grown tubercles~~
~~rise from a subcylindric, or slightly~~
~~flattened base~~ —

F see next page.

~~The tubercles are flattened at base, of a transverse rhombic form, perfectly smooth; this part is like the larger ones~~

(hidden)

Lower part of Tubercles ~~are~~ flattened, ~~at base~~ acute at the edges and slightly carinate more on the upper and less on the lower surface & smooth ~~entirely hidden in the living plant~~; Upper visible part of tubercle is triangular in outline convex and carinate below, more convex and tuberculated above, ~~On this upper part only are the above described grooves; the middle longitudinal one, contains is filled with the long silk wool or rather straight smooth and glossy silk, which finally becomes matted, forming a cushion~~

~~White or pale yellowish~~

~~The longitudinal and transverse grooves~~

Split up by 3 longitudinal and numerous transverse grooves into many irregularly angular ~~warts~~. The middle longitudinal groove expands towards its base into the floriferous areola & is in the young tubercle wadded by long & straight silky white or yellowish wool, which in the full grown ones gets matted,

and dirty

and finally (after several years) entirely disappears. ~~The grooves do not extent to the lower flattened part of tubercle, as has been stated~~, ♁ see next page

The flowers are „central" but this expression × must not be taken in the strictest sense of the word; they appear ~~to come~~ from the mass of long wool in the vertex of the plant but in reality are produced from the areolae at the base of the central groove, of the youngest

× here as in all these plants

× when bearing flowers is somewhat thick &

tubercles. and are born by the lower smooth part, which × takes the shape and function of a short peduncle, ~~pushing aside~~ bearing laterally the upper part of the tubercle, much like a bract.

The axills of even these young tubercles are entirely naked ~~the wool being only~~ only the areola ~~and areolar~~ groove producing the long & glossy ~~straight~~ silky fibres which often are an inch in length and cover the lower part of the flower and hide the fruit entirely.

~~Tubercles 6-9 l. broad, lower part 2-3 upper~~
~~tubercled part~~ vermicose 5-7 l. long.

F The lower part of the plant is top shaped ~~the upper surface~~ covered with the scale like remnants of the earlier tubercles;
the upper part hemispherical or depressed, flattened, ~~scarcely~~ hardly higher than the surface of the ground; 2-4½ inches in diameter.
Tubercles in 8 or rarely 13 spiral rows; 6-10 l. broad, lower part 2-3 upper vermicose one 5-8 l. long.
Dr Parry informs me that he has seen specimens where the upper fissured part of the ~~tubercle~~ is ¾ inch long and 1¼ wide.

Flower ☿ see last page

flower about one inch long and in diameter, when fully open
ovary 3 l. long oval, tube 4-6 l. long
~~lower~~ ~~exterior~~ ~~sepals about 12 linear lanceolate, fleshy~~
~~whitish, upper ones~~ about 12 exterior sepals whitish, fleshy, lower ones lanceolate upper ones spathulate; 8 interior sepals spathulate mucronate, rosecolored on the edges; 6-9 l. long 2 l. wide
petals about 12 in a single series, linear spathulate, obtuse or often cuspidate or mucronate, and ~~laciniate~~ somewhat fringed. 9 l. long 2 l. wide rose ~~or pale~~ or pink colour.
Stamens numerous white with orange anthers; style white expanding into a funnelshaped light yellow ~~stigma~~ irregularly ~~with~~ 5-10 ~~parted~~ stigma
Fruit oval, crowned with the remnants of the flower, about 5 l. long, entirely

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hidden in the long areolar wool: seed (globose-obovate), nearly straight, with the orbicular areola at base — 0,8''' long remarkably rough and tuberculated. —

see figure pag. 153.

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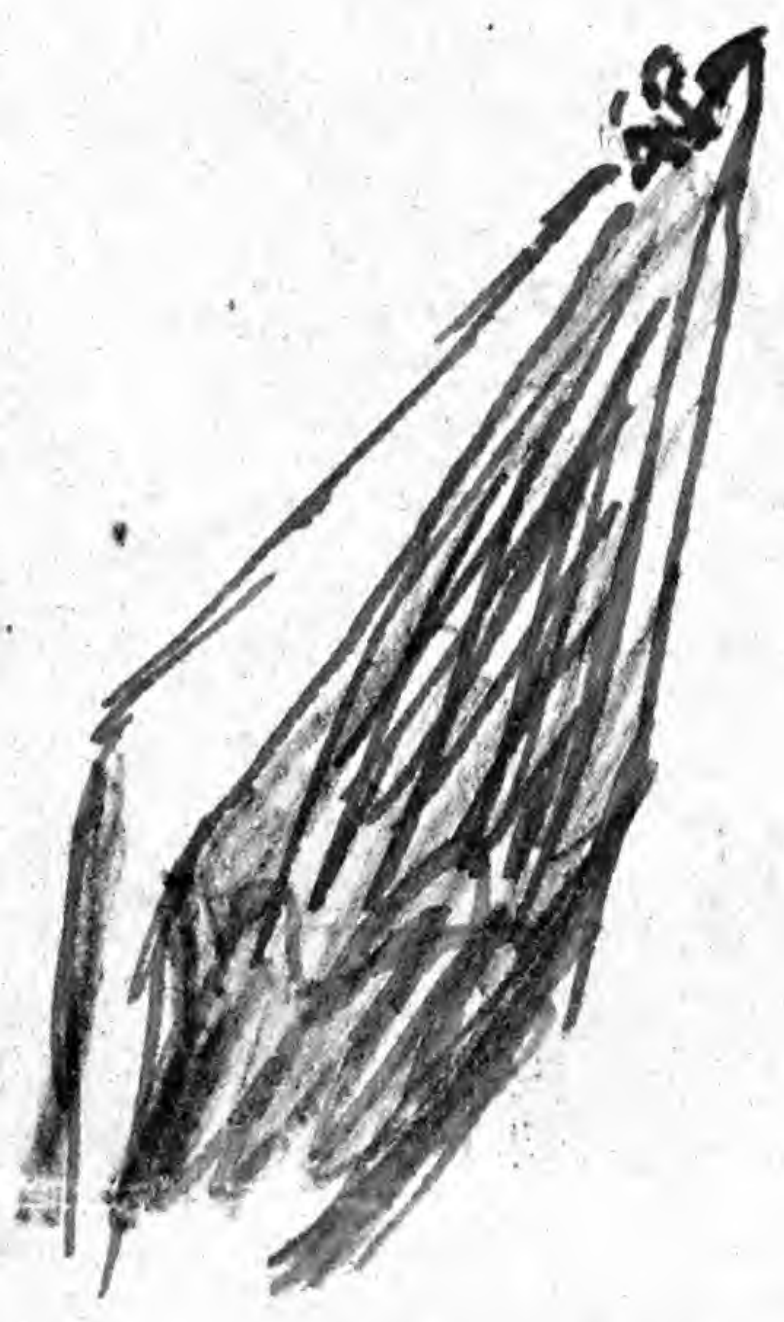
Anhalonium prismaticum Mexico, received from Pr. Salm (ought to be named pyramidatum, there is nothing prismatic in the 3 cornered pyramidal tubercle!) – has the same long straight finely matted wool, but it appears to come as much as I can see in a dead & broken up specimen from the real axillae or base of lowest scaly part of tubercle; small areola, short woolly when quite young and below the point of the tubercle sometimes with a few spines. Here is something for morphology! —



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